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April 2, 2012

Mr. Bill Peterson, Refuge Manager
Wapanocca National Wildlife Refuge
P.O. Box 279
178 Hammond Avenue
Turrell, Arkansas 72384

Dear Mr. Peterson:

Enclosed is our report on the deer herd health checks conducted on Wapanocca National Wildlife Refuge, Crittenden County, Arkansas, during the week of July 25-29, 2011. The health check involved examination of five deer. The data are arranged into a series of tables (parasitologic, serologic, and pathologic) and are accompanied by interpretive comments.

The interpretive comments focus on the current and future probabilities of problems due to the two major disease problems of southeastern deer: 1) a syndrome of parasitism and malnutrition which generally tends to be density dependent and 2) hemorrhagic disease which is less clearly linked to deer density. The abomasal parasite count (APC) was 788, indicating the population is probably still within the carrying capacity of the habitat.

As indicated in table 4, the levels of parasitism and infectious disease in the deer examined were relatively low. We did not detect any significant health problems among the deer examined, and we would not anticipate the deer population to suffer from important density-dependent diseases as long as there is not a marked increase in the population. Additional information on many of the parasites and diseases mentioned in the report can be obtained from our Field Manual of Wildlife Diseases or from our website at www.scwds.org. If you have any questions about the report, please do not hesitate to contact me.

Sincerely,

Kevin Keel, DVM, PhD, DACVP
Assistant Research Scientist

Enclosures

CC: Mr. Richard Crossett
Mr. David Goad
Mr. Brad Miller
Mr. Cory Gray
Ms. Cynthia Dohner
Mr. Chuck Hunter
Mr. Michael Piccirilli

Table 1. Arthropod, helminth, and protozoan parasites of five white-tailed deer (*Odocoileus virginianus*) collected from Wapanocca National Wildlife Refuge, Crittenden County, Arkansas, on July 25-29, 2011.

Animal Number	**1**	**2**	**3**	**4**	**5**
Age (years)	3	3	2	3	2
Sex	F	M	F	M	F
Weight (pounds)	96	160	128	210	124
Physical Condition	Fair	Fair	Fair	Good	Good
Kidney Fat Index	10.5	10.5	10.5	53.3	55.1
Packed Cell Volume	35	40	41	59	42
Serum Protein	8.7	7.1	7.0	7.3	7.1

Arthropods

Animal Number	**1**	**2**	**3**	**4**	**5**
Lice	-	-	-	-	-
Louse Flies	-	-	-	-	-
Ticks	Light	Light	Light	Light	Light
Chiggers	Light	-	-	-	-
Ear Mites	-	-	-	-	-
Nasal Bots	-	-	-	-	-

Location in Host	**Helminths**	**Number of Parasites Per Deer** 1	2	3	4	5	**Range**	**Prevalence**	**Average**
Lungs	*Dictyocaulus viviparus*	7	2	0	0	0	0-7	40%	1.8
	Protostrongylid larvae	-	+	+	-	-	--	40%	--
Liver	*Fascioloides magna*	4	1	28	7	0	0-28	80%	8.0
Esophagus	*Gongylonema pulchrum*	0	10	0	0	8	0-10	40%	3.6
Rumen									
Abomasum	*Mazamastrongylus odocoileus*	583	1,185	500	1,114	220	220-1,185	100%	720.4
	Mazamastrongylus pursglovei	0	0	0	86	0	0-86	20%	17.2
APC = 788	*Ostertagia mossi*	97	155	0	0	0	0-155	40%	50.4
	Protozoans								
Blood	*Theileria cervi*	-	-	-	+	+	--	40%	--

Table 2. Results of serologic tests and microbiologic/histologic assays for selected diseases in five white-tailed deer (*Odocoileus virginianus*) from Wapanocca National Wildlife Refuge, Crittenden County, Arkansas, on July 25-29, 2011.

Disease	Deer Number				
	1	2	3	4	5
Serologic Tests					
Leptospirosis					
(serotype *bratislava*)	**Wk+**	Neg	Neg	Neg	**Pos**
(serotype *pomona*)	Neg	Neg	Neg	Neg	Neg
(serotype *hardjo*)	Neg	Neg	Neg	Neg	Neg
(serotype *grippotyphosa*)	Neg	Neg	Neg	Neg	Neg
(serotype *icterohemorrhagiae*)	Neg	Neg	Neg	Neg	Neg
(serotype *canicola*)	Neg	Neg	Neg	Neg	Neg
Brucellosis	Neg	Neg	Neg	Neg	Neg
Infectious bovine rhinotracheitis (IBR)	Neg	Neg	Neg	Neg	Neg
Bovine virus diarrhea (BVD)	Neg	Neg	Neg	Neg	Neg
Parainfluenza$_3$ (PI_3)	Neg	Neg	Neg	Neg	Neg
Epizootic hemorrhagic disease (EHD)	Neg	Neg	Neg	Neg	**Pos**
Bluetongue (BT)	Neg	Neg	Neg	Neg	**Pos**
Microbiologic/Histologic Assays					
Bovine tuberculosis[1]	Neg	Neg	Neg	Neg	Neg
Chronic wasting disease[2]	Neg	Neg	Neg	Neg	Neg

[1] Gross and microscopic examination of retropharyngeal lymph nodes.
[2] Microscopic examination for lesions (H&E) and immunohistochemistry.

Table 3. Lesions and pathologic conditions in five white-tailed deer (*Odocoileus virginianus*) collected from Wapanocca National Wildlife Refuge, Crittenden County, Arkansas, on July 25-29, 2011.

	Deer Number				
Lesion/Condition	**1**	**2**	**3**	**4**	**5**
Granulomatous pneumonia with intralesional nematode larvae (*Parelaphostrongylus* sp.)	-	1	1	-	-
Eosinophilic interstitial pneumonia	-	1	1	-	-
Pleural fibrosis / hyperplasia	1	-	-	-	1
Eosinophilic pleuritis	-	-	-	-	1
Chronic tubulointerstitial nephritis	-	-	-	-	1
Chronic orchitis and epidydimitis	-	-	-	2	-

*Key: - = lesion or condition not present; 1 = minor tissue damage or mild pathologic change; 2 = moderate tissue damage or moderate pathologic change; 3 = extensive tissue damage or marked pathologic change.

INTERPRETIVE COMMENTS: White-tailed deer collected from Wapanocca National Wildlife Refuge, Crittenden County, Arkansas, on July 25-29, 2011

Large lungworms (*Dictyocaulus viviparus*) were present at low numbers in two deer. Protostrongylid larvae, probably from muscleworms (*Parelaphostrongylus andersoni*) were present in two animals and were associated with mild pneumonia (clinically insignificant). Abomasal parasites (*Mazamastrongylus odocoilei*, *M. pursglovei*, *Ostertagia mossi*) were at a moderate level (APC = 788) indicating that the herd is probably within nutritional carrying capacity. Gullet worms (*Gongylonema pulcrum*) were present at low numbers in two deer, and four deer had liver flukes (*Fascioloides magna*); these parasites are not considered important to herd health at the levels encountered. Blood protozoa (*Theileria cervi*) were identified in two deer. All deer had a light infestation of ticks on chiggers were present on one deer.

Physical condition ratings, kidney fat indices, and body weights were variable with three animals in fair overall health and two in good health; hematologic values of all deer were near the median values of healthy deer. In addition to lesions attributable to parasitism (noted above), two deer had mild pleural fibrosis (possibly due to past infestation by *Setaria yehi*); one deer was affected by mild pleuritis, mild tubulointerstitial nephritis, and moderate epidydimitis, all of which were apparently unrelated. Serologic tests for antibodies to selected infectious diseases indicated one deer was positive for EHD and BT, but all others were negative. Two deer were positive or weakly positive for *Leptospira* antibodies.

An overview is as follows: (1) based on APC data the herd is probably within nutritional carrying capacity; (2) the levels of important pathogenic parasites, especially large lungworms, are not at sufficient levels to be of concern; (3) selected viral and bacterial diseases have not had high levels of activity on the area; (4) the overall health status of the herd is presently such that disease-related mortality is probably not occurring to a significant extent at the present time. Continuation of current herd density is unlikely to be associated with density dependent diseases. However, three deer were in only fair nutritional condition, and increases in deer numbers may result in declines in deer-herd health.